



THE HAMPDEN COUNTY RADIO ASSOCIATION, INC.

ZERO BEAT

JANUARY 1, 1993

OUR 45th ARRL AFFILIATED YEAR

*** MEETING NOTICE ***

FRIDAY JANUARY 8, 1993 DOORS OPEN @ 7PM,
MEETING STARTS @ 8PM.

GUEST SPEAKER IS JEFF KLINE WA2TEO, A TOP SINGLE OP
VHF CONTESTER.

1992-1993 CLUB OFFICERS

PRESIDENT: LARRY N1EPE
VICE PRES: FRED N1DPM
TREASURER: GREG N1AEH
SECRETARY: JIM N1DUY

1992-1993 DIRECTORS

TRYON WA1YCA	PAUL KA1WER
FRED KA1TBS	KEVIN NR1L
BOB KA1QFE	BOB W1ZGP
ADAM N1GVV	DAVE K1MVR

HAMPDEN COUNTY RADIO ASSOCIATION, INC.
P.O. BOX 482
WEST SPRINGFIELD, MA. 01090 - 0482

011 SPFLD MA 20:07
RCIT E V C R 14 I 19/93
[REDACTED]
[REDACTED]
[REDACTED]

12/29/92 #1

JANUARY MEETING

The January meeting will feature Jeff Klein, WA2TEO who will speak on the upcoming VHF contest. This year the meeting will occur on Friday January 8, 1993 to avoid the New Years Day holiday. Jeff used to live in a somewhat mediocre location for VHF contesting in Poughkeepsie, New York. However, in this location Jeff still managed to be a consistent top 10 finisher in the United States. Jeff, who now resides in Trumbull, Connecticut, has consistently either won or finished second in the contest the past several years. Come on out to the meeting and get psyched for the contest, listen to a winner tell you how it is done. Just a reminder that the contest will be on the weekend of January 23th and 24th, 1993. This year we will also be conducting a friendly club competition with the Mount Tom club. So be sure to send in your logs to our club no matter how many contacts you make. We also will help anyone who needs help scoring the event. Just send your logs to:

Dave Olson K1MVR

1371 Enfield Street

Enfield, Connecticut 06082-5524

The HCRA will also be mailing each club member a special VHF contest mailing that will be mailed shortly before the contest. This will contain such goodies as log sheets, grid maps, activity info, FM frequencies and more. With that, we hope to hear you in the test!

PRESIDENT'S MESSAGE-Greetings.....hope everyone had a pleasant Holiday Season. Last year was a good year for the Club, but your Board of Directors is working on making 1993 an even better year for Club members.

We've got a great topic and speaker for the January meeting scheduled for the 8th. Jeff Klein, WA2TEO, will be presenting VHF Contesting. Jeff is really involved in this and is looking forward to sharing with us his expertise.

Speaking of VHF contesting, it's this month so if you need any help or have any questions now's the time to call either Fred Stefanik, N1DPM, or Dave Olson, K1MVR. They are our VHF coordinators for the contest. Check out Fred's article in this issue concerning the inter-club competition with Mt. Tom Club that Fred arranged. Sure looks like fun for all of us in both clubs!

Plans are being finalized for topics and speakers for this Spring. For February it looks like Chet Kalis, W1HGJ, will cover ATV. This may be the first ATV presentation we've ever had and should be very interesting. Also looking into topics such as DXpedition, antennas & feedlines. Will keep you posted as plans develop.

The Board directed me to mention two Club policies that everyone should know. Club members who are having difficulty paying the \$10 for renewal due to hardships, etc., may request a waiver of the annual dues. All requests should be directed to the Treasurer Greg Stoddard, N1AEH. Any and all such inquiries will be kept confidential with only the Treasurer knowing of a request. The other is our Cancellation Policy due to inclement weather (just in time!). In the event it's necessary to cancel a meeting we will request WHYN AM & FM to make the announcement as part of their cancellation notices. In addition, once the decision is made to cancel either I or the Vice President will use the local repeaters to spread the word. So we suggest you just monitor those local repeaters for info.

A bit of news - Chuck Daley, N1JJF, has decided not to continue as our Editor effective February. On behalf of the Board of Directors I wish to thank him for his efforts and we wish him well. Kevin Hilinski, NR1L, a current Board member, has temporarily volunteered to take over as Editor. We can all help Kevin by supplying him with articles. Just remember he needs them by the 15th of each month.

Per the survey results we are planning to have the voting for Club Officers at the June meeting. There will not be a banquet but we will have a regular meeting at the church. If interested in running for any of the open positions please see any Board member. Also, because of the survey results, we plan on using the first 5 minutes of meetings to have a "Open Issues" time. At this time you can ask questions of the Board and we can all discuss (time permitting) future events such as Election of Officers, Field Day or anything you wish brought up.

Let's not forget the Flea Market. Paul Geng, KA1WER is looking for about 13 volunteers to help. On the survey many of the members indicated interest in helping. Well now's the time. So just give Paul a call or see him at the next meeting.

P.S.-Charlie, K1KI thanks for attending the Board meeting. The January Board meeting will be again at Dave Olson's QTH on 14th.

73-Larry

JANUARY RADIO FACTOIDS

- 1/10/46-First successful moonbounce signals achieved by the U.S. Army's Project Diana at Belmar, NJ, using CW FM techniques which E.H. Armstrong developed and gave to the military.
- 1/13/10-This was probably the first live dramatic radio broadcast, an experiment by DeForest. A 500w transmitter was situated on the roof of the building.
- 1/13/28-The first scheme for television was that of General Electric inventor E.F. Alexanderson. A broadcast on this date was transmitted from the G.E. lab in Schenectady and received in Alexanderson's home, a few miles away, marking the beginning of television as a public medium.
- 1/19/03-Marconi's "Wireless Cable Company" station on Cape Cod sent a message bearing greetings from Teddy Roosevelt to England's Edward VII. This was the beginning of commercial longwave radiotelegraph communication.
- 1/21/13-Professor Earle Terry at the Univ. of Wisconsin contributed much to vacuum tube technology. His station, "9XM", was broadcasting weather reports via Morse as early as 1917. Voice transmissions began in 1921.
- 1/31/13-As a college senior at Columbia, Armstrong did not have the money to file for a patent, so he drew up schematics of his regenerative feedback circuit and had them notarized. The actual patent application was filed October 29, 1913. Many years later, Armstrong discovered "super-regeneration", for which he obtained a patent in July of 1922.

WELCOME TO NEW MEMBERS !!

WA1OHR EVERETT PALUSKA
KA1ZUK ALFRED DeCOTEAU
N1MOC KEITH STROMBERG
N1LZM ALAN RIFKIN

N1KUN BRIAN SULLIVAN
N1NNE NORBERT DAVIGNON
WB1FCG MARK LUCIA

REINSTATED FORMER MEMBERS!!

WB1FNP PETER RUSSELL

WZ1V RON KLIMAS

CONGRATULATIONS TO THE UPGRADES AT THE HCRA VE TEST SESSION!!

N1KQG HERBERT EWING GENERAL CLASS
N1LYJ DONALD TALBOT TECH-HF
N1IJK BARRY MASON EXTRA CLASS

1993 JANUARY VHF SWEEPSTAKES CONTEST

Once again that time of year is upon us. No it's not the holiday season anymore, it's time for the January VHF-UHF contest.

This year the contest dates are a little later than usual. I'm told this is done so the contest would fall in the "off weekend" for the NFL football season. This is a great idea, because it will help reduce the chances for that dreaded TVI call. Anyway the schedule is as follows: Dates, January 23, 24, and 25, Time, contest start 1900 UTC (2 PM) Saturday, contest end 0400 UTC Monday (11PM Sunday). For a copy of the rules, please see December 1992 QST, on page 124. If you can't come up with a copy let me know and I can make one available.

This is the contest that entertains Club Competition. In the past few years the HCRA has made great advances concerning our club score. The most notable being the amount of participation by YOU, the membership. In 1991, we submitted 84 Logs with a club score of 542,228! In 1992, we submitted 65 Logs with a club score of 734,581!! LET'S TRY TO BREAK THAT 1,000,000 POINT BARRIER!!

This year along with the ARRL club competition we have added something extra. The HCRA has offered a challenge to the Mount Tom Amateur Repeater Association and they have accepted! This is a "inter-club competition". The prize will be a framed certificate presented to the winning club at a regular meeting, by the losing club. We hope this can continue and possibly we can change the award to a engravable plaque. The whole idea is to promote activity on our VHF-UHF-MICROWAVE bands. Because of this, both clubs will win.

Because the contest is so late this year, the usual logs, grid maps, entry forms and other information will be mailed separately, closer to the contest date.

Let's extend our holiday spirit! As all of you know, all us Hams like to "collect" equipment. However, not everyone has a VHF or UHF radio to use in the contest. If you have a "extra" radio or H.T., please lend it out to someone that can put it to use for the weekend. In order to coordinate this better, if you either have equipment to lend, or would like to borrow a piece of gear please contact myself or Dave Olson K1MVR. We will help make sure that we can put the "extra" gear into hands that will use it. This will help us break the 1 million point mark.

In the past we've talked of "activity hours". A list of these will be sent with the contest mailing, but anytime you can be active there will be stations eager to work you.

Hope to work you all in January and best of luck to all!!

Fred Stefanik
N1DPM

10,000 - 100,000 - 1,000,000 POINT AWARDS

Last year at this time we decided that to help increase activity on the VHF and UHF bands that the HCRA should sponsor an awards program. This program is to award an operator and, or station for accumulating a score of greater than 10,000, 100,000, or 1,000,000 points in any of the ARRL contests using frequencies higher than 50MHz (6 meters). These scores are cumulative, contest to contest. I've started a database of the club members that qualify for these awards. The first presentation of these awards will be at the January 8th HCRA meeting. 30 awards will be presented at that meeting. If you are one of those individuals, please try to attend to receive the award.

Because of some coordination problems last year, a running list of calls and scores was never printed in Zero Beat. Because this is a cumulative award, the following list has three columns; Callsign, Score for January SS, Total score following June QSO Party. The third column is also the total score to date, as this is the last contest results available from QST.

CALL	JAN.SCORE	TOTAL	CALL	JAN.SCORE	TOTAL
W1KK	39,397	39,397	W1MH	204	204
K1BE	7,698	7,698	K1FO	29,400	29,400
K1GX	39,397	107,251	K1II	8,496	16,764
AC1T	39,693	39,693	NA1W	18,352	27,400
NC1B	39,397	39,397	NC1I	39,397	39,397
NJ1E	84	84	NM1K	7,200	12,240
WQ1X	860	860	KA1ZE	106,220	106,220
KB1MU	834	834	KC1TH	208	208
KC1TV	2,604	2,604	KC1ZJ	6,049	6,049
KC1ZN	12,572	75,606	W1ALL	396	396
W1CJK	650	650	W1DGJ	129	129
W1ETH	1,120	1,120	W1NMQ	1,157	1,157
W1RIL	83,174	85,644	W1UWX	408	408
W1VNE	99	99	W1ZGP	10,556	10,556
K1BXE	616	616	K1CPJ	13,505	13,505
K1CYD	4,128	4,128	K1JAO	1,776	1,776
K1JDL	396	396	K1MVR	215	215
K1WVX	2,227	4,327	N1ABJ	3,210	3,210
N1AEH	1,050	1,050	N1CDR	847	847
N1DOP	4,020	4,020	N1DPM	86,760	183,786
N1EJG	3,060	11,528	N1EPE	370	370
N1EUZ	36	36	N1EVE	366	366
N1FFZ	185	185	N1GVV	354	354
N1IED	84	84	N1JJD	7,698	7,698
N1JOF	42	42	N1JOH	412	412
WA1EYF	58	58	WA1JUJ	945	945
WA1SMH	465	465	WA1UQC	39,397	39,397
WA1YCA	170	170	WA3EEC	2,400	2,400
WB1ETS	5,175	5,175	WB1FIP	4,550	4,550
WB1FIQ	110	110	WB1GLZ	126	126
KA1CRX	224	224	KA1EXJ	30	30
KA1FHX	72	72	KA1QAS	6,175	6,175
KA1QFE	6,462	6,462	KA1QHG	268	268
KA1TBS	6,462	6,462	KA1VEC	2,400	2,400
KA1VED	4,840	4,840	KA1WER	6,047	6,047
N1JJD-M	4,112	4,112	MULTI-OP, OPRS = N1JJD, K1BE		
K1BE-M	11,284	11,284	MULTI-OP, OPRS = K1BE, N1JJD		
W1NY-M	236,385	236,385	MULTI-OP, OPRS = W1KK, NC1B, NC1I, WA1UQC, K1GX, AC1T		
KA1WER-R	12,095	12,095	ROVER, OPRS = KA1WER, KC1ZJ		
KA1TBS-R	12,924	12,924	ROVER, OPRS = KA1TBS, KA1QFE		

Congratulations to all. Hope that you can put yourself "over the top" this January 23-24. I'll be sure to print a running total list after the results of each contest are out in QST.

Fred Stefanik
N1DPM

DATE: 12/16/92

FROM: Ron Klimas, WZ1V

SUBJECT: ZERO BEAT
VHF/UHF column
(EDIT IT AS YOU WISH)

LIFE BEYOND HF
by
Ron Klimas, WZ1V

The December 12-13 Geminids meteor shower provided me with 5 new grid squares and what I thought would be my last long haul contacts of the year on 2 meters, but Boy, was I wrong !

The morning of Tuesday December 15 started off one of the biggest Tropo openings of the year, and the best I've heard in winter months ever. When that nasty 3 day snowstorm finally moved out to sea, it sucked in a huge high pressure ridge behind it which set up a fantastic wide coastal duct all the way from Nova Scotia to the Florida Keys.

I logged in W2MGF/4, FM03 in southern North Carolina that morning at 1420Z, with 59 signals both ways. Later in the day and early evening AC1T/R was worked into by a Baltimore, MD station running just 5 watts on 70 cm !

I was QRV again by 0005Z, and began by working VE1MR in Halifax, Nova Scotia on 432 Mhz. KA1TBS in FN32 was having fun working several W4's from his Southwick, MA QTH. By 0024Z, I worked my first Florida station on two meters, WD4IXD, in EL98 who was running 5-5. By the end of the night I worked ten more Florida stations on 2 M, including WB4MJE, Rene, down in EL94 in the Keys. I also worked 2 South Florida grids, EL88 & EL98, on 432 using just 50 watts and a single yagi.

I know that Steve, super-station K1FO was busy holding down the fort on 432 that night, and heard that he had managed to work a consecutive string of 12 Florida stations throughout the state. That's what you call total coverage !

The best long haul DX contacts of the evening seemed to be placed in the court of KM1H in FN42 southern New Hampshire. Carl reports working WB4MJE in EL94 , as well as 5 other Florida grids, EL86, EL87, EL88, EL89, EL97, all on 432. (not to mention a dozen new southern grids on two meters). Now that's what I call stretching out the distance a bit !

I never though it would be possible to have this kind of opening so late in the year, but I stand corrected. Anyone taking bets on this kind of thing occurring during the January VHF contest ? (hmmm !)

NA1W

ALAN A. CARPIN
184 NOTTINGHAM ST.
SPRINGFIELD MA 01104-2617

COMING UP SOON IS THE JANUARY VHF CONTEST. IF YOU HAVE NOT STARTED GETTING YOUR EQUIPMENT READY, NOW IS AS GOOD A TIME AS ANY. ONE METHOD IS TO GET A FRIEND TO POWER UP. NO ONE AROUND ?

TRY A BEACON. BEACONS ARE AUTOMATED TRANSMITTERS, THEY SEND A CONTINUAL SIGNAL USUALLY GIVING YOU THE CALL ALONG WITH ITS GRID SQUARE. BELOW IS A LIST OF THOSE IN THIS AREA. LIST IS AN EXCERPT FROM " CHEESE BITS ", NEWSLETTER OF THE PACKRATS.

144.267 WA2UMX FN23	144.276 W2RTB FN12	144.277 VE2TWO FN08
144.281 KW2T FN13	144.288 W3VD FM18	144.291 W3VD FM19
144.292 W9I0/2 FN24	144.298 WB2CUS FN10	
432.075 WA4PGI FM07	432.289 W3VD FM19	432.303 KW2T FN13
432.315 W1UHE FN41	432.340 KB3NQ FN20	
903.073 KB3NQ FN20	903.080 N3CX FN20	
1296.050 K3IVO FM18	1296.080 N3CX FN20	1296.200 WA4PGI FM07
2304.035 N3CX FN20	3456.140 N3CX FN20	

THESE ARE LOW POWER AND ARE DIFFICULT TO HEAR. ANOTHER SIGNAL SOURCE, MUCH EASIER TO RECEIVE OCCURS EVERY MONDAY NIGHT.

THE WEEKLY NETS OF THE PACKRATS. THEIR TIMES AND FREQS FOLLOW.

50.125 AT 7:30 K3EON NET CONTROL
144.150 AT 8:00 W2EIF NET CONTROL
222.125 AT 8:30 WB2YEH NET CONTROL
432.110 AT 9:00 WA3AXV NET CONTROL
1296.100 AT 9:30 WA3NUF NET CONTROL
903.100 AT 10:00 N3AOG NET CONTROL

THE NET CONTROL STATIONS TURN THEIR BEAMS UP IN THIS DIRECTION TO LOOK FOR CHECKINS, SO ARE LOUD ENOUGH TO BE EASILY HEARD.

I CAN HELP, BEING ACTIVE FROM 6 METERS THROUGH 2304. CALL ME MOST ANY NIGHT AFTER 6:30 AT 788-9845.

AL NA1W

YOUR VOTES ARE IN ... OUR QUESTIONS HAVE BEEN ANSWERED.

1992 - 1993 HCRA MEMBERSHIP SURVEY (18 SURVEYS RECEIVED)
**** RESULTS **** (AS OF 12-9-92)

Here are the results of the HCRA 1992 - 1993 Membership Survey. There has been 2 club meetings, and roughly 6 weeks since the survey was published. This is a summary of what has been received by 12-9-92.

The questions that required a check mark were totaled and the proper number appears instead of a check.

The "fill in the blank" questions have all responses shown. For comparison, the responses for questions 18 & 19, are listed in the same exact order. In other words, the 3rd response to # 18, comes from the same survey as the 3rd response to # 19.

The board will be using these results to influence their decisions for future meeting topics, and club activities. We have already used this valuable tool in some decision making at the last board meeting. This information helps us, as a board, make decisions that can hopefully help the club grow and prosper.

Now for my "soapbox". As you read these results, please pay attention to the questions concerning club participation and or individual participation. These results are startling!! Our club, the HCRA, is a "CLUB". This means, it needs EVERYONE'S PARTICIPATION. I think it's sad to see a response to a question like # 15. Think about this, our club has approximately 150 members. Out of those 150, 18 responded to the survey. Out of those 18, 11 thought that TECH CORNER should be reinstated, and 1 did not. Out of the 12 responses to question 15, 10 said they did not want to coordinate TECH CORNER, and no one said that they would! Now for the sad part, out of our 150 or so members 132 didn't even respond!!!! Keep this type of scenario in mind the next time you say: Why don't we do _____?? or I'm sick of hearing about _____!! Instead, PLEASE TRY, I'd (we'd) like to coordinate _____, or, I'd like to speak or write about _____. This type of approach can only HELP the HCRA become a much better informed more "rounded" GENERAL INTEREST radio CLUB. REMEMBER, WE NEED EVERYONE'S EFFORT TO MAKE THIS CLUB "TOP NOTCH".

BEST 73's, AND A HAPPY NEW YEAR,

FRED STEFANIK - N1DPM

1. What of the following HCRA events do you participate in?

8 Field Day
15 VHF Sweepstakes
15 Auction
16 Flea Market
10 Banquet
17 Regular Monthly Meetings
13 Holiday Social

2. I would like to see more meetings on:

6 Packet Radio
10 Oscar/Satellites
8 DX or DXpedition (Long Distance Communications)
6 VHF and Above
4 Field Day
6 Homebrewing
10 Antennas 6 HF 4 VHF 8 GENERAL
7 QRP (Low Power Operation)
10 Portable Operation
8 Other: COMPUTERS, EMERGENCY OPERATION, RF PROPAGATION, MOONBOUNCE, SECURITY SYSTEMS, "OLD TIMERS NIGHT", ATV, DIGITAL COMMUNICATIONS

3. What was your all time favorite meeting? LIGHTNING PROTECTION, W3HOT-NO TUNE TRANSVERTERS, MODEL AIRPLANES, MIXI-PORTABLE VHF CONTESTING, DX-PEDITIONS, OLD TIMERS NIGHT, AUCTION, ARRL SPEAKER ON RFI, WE HAD A "NO-SHOW" AND WINGED IT, ALL WERE INTERESTING, DON'T REMEMBER.

4. What was your favorite meeting last year? KY1H-HF CONTESTING, ARRL SPEAKER ON RFI, TECH CORNER ON FEEDLINES, AUCTION, WAZAAU-MT.GREYLOCK VHF EFFORT, BANQUET, OLD TIMERS NIGHT, N1CB-TOWERS, K1ZZ.

5. Would you be more apt to attend our annual club meeting and election of officers if it were to be held at a normal meeting rather than in conjunction with the banquet? 14 YES 3 NO

6. I would attend the HCRA banquet if it were:

5 Kept as is
8 Catered at the church
5 Picnic / Barbecue
5 Expanded Holiday Social

7. I would be interested in helping at the flea market.
13 YES 5 NO

8. I would be interested in helping at Field Day.
7 YES 12 NO

9. I find most meetings: (Choose 2) (One from each column)

2 Too Long 1 Too Technical
1 Too Short 5 Not Technical Enough
16 Just Right 13 Just Right

10. Do you understand what Field Day is about and why it is important to Amateur Radio?

17 YES 1 NO

11. Would you be interested in combining Field Day with a club cookout or picnic?

9 YES 6 NO

12. Do you feel that our club Field Day effort is too serious?

10 YES 6 NO

13. Do you feel that our club effort in the January VHF Sweepstakes contest is too serious?

6 YES 10 NO

14. Are you interested in purchasing a Hat, T-Shirt, or Jacket with the HCRA name and a Logo on it?

13 YES 5 NO

15. Would you like to see "Tech Corner" reinstated?

11 YES 1 NO

If yes, are you willing to coordinate it?

0 YES 10 NO

16. Would you like to see the HCRA run a licence class?

13 YES 1 NO

If yes, would you like to run or instruct them?

3 YES 8 NO 1 MAYBE?

17. We believe the HCRA is a general interest amateur radio club. If you could change anything in the club, what would it be?

PROMOTE TEAMWORK, NOT COMPETITIVENESS BETWEEN MEMBERS.
PUBLIC RELATIONS, WE NEED TO ATTRACT; NEW HAMS, OLD HAMS
AND ESPECIALLY NON HAMS OR "WANNA-BE" HAMS. REPEATER
OWNERSHIP. BANQUET BACK AT CHURCH. MEETING NIGHT. A
CLUB ACTIVITY OR PROJECT. REVIEW THE "AMATEUR'S CODE",
AND TRY TO FOLLOW IT. GET MORE MEMBERS TO BECOME
"ACTIVE MEMBERS" INSTEAD OF WHINERS. SPREAD THE
VALUABLE KNOWLEDGE AVAILABLE AROUND.

18. What would you like to get from being a HCRA member?

SATISFACTION FROM BEING PART OF A "TECHNOLOGY EXCHANGE".
A \$5000 GRANT FOR EQUIPMENT.
LEARNING TECHNICAL ASPECTS OF VARIOUS RADIO INTERESTS,
AND SOCIALIZING WITH FELLOW HAMS.
MORE KNOWLEDGE ABOUT AMATEUR RADIO, AND MORE GROUP
PARTICIPATION.

MORE HF STUFF.

GET MORE PEOPLE INTERESTED IN VHF-UHF&MICROWAVE
EXPERIMENTATION, THIS IS OUR UNEXPLORED NEW FRONTIER.
GOOD INFO, FUN ACTIVITIES (FIELD DAY, JANUARY VHF
CONTEST), MEETINGS.

THIS IS A TRICK QUESTION, SEE # 19.

19. What would you be willing to give to get what you listed above?

PROMISE NOT TO TURN MY BACK ON SOMEONE ELSE WHO NEEDS
HELP.

A BIG THANK YOU.

I FEEL I DO MY SHARE AND PERHAPS WOULD BE WILLING TO DO
MORE.

SEVERAL HAMS A MONTH EXTRA TO HELP NEWCOMERS.

----- (BLANK)

KNOWLEDGE, HELP, ASSISTANCE, DIRECTION, I JUST WISH
PEOPLE WOULD ASK!!

----- (BLANK)

TRICK QUESTION PART 2, SEE # 18.

20. What is your favorite Amateur Radio interest?

MEETING OTHER HAMS

QRP / DX

QRP, DX, VHF AND ABOVE, LIVING THE "AMATEUR'S CODE".

VHF-UHF-MICROWAVE EXPERIMENTING, BUILDING, CONTESTING.

HF

VHF, COMPUTERS COMBINED WITH HAM RADIO.

CW

HF RAGCHEWING

DX ING

VHF-UHF-MICROWAVE BUILDING, EXPERIMENTING, CONTESTING.

HOMEBREWING ON A SHOESTRING.

VHF-UHF CONTESTING, FIELD DAY.

PACKET RADIO